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EXAMINER	
DANIELS, ANTHONY J	

ART UNIT	PAPER NUMBER
2615	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/991,232	KUMLER, JAMES J.	
	Examiner	Art Unit	
	Anthony J. Daniels	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-37 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) 1-37 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 15 November 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of ***50 to 150 words***. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The disclosure is objected to because of the following informalities: On page 8, Line 19, "retarded" should be "retarder".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-5,7-9,14,15,17,25,26,29,35,36,37 are rejected under 35 U.S.C. 102(e) as being anticipated by Medan et al. (US 2001/0002140).

As to claim **1**, Medan et al. teaches an immersive imaging system (see Figure 3), comprising: a first lens (see Figure 3, optical pathway and chopper "52","60") having a first field of view (see Figure 3); a second lens (see Figure 3, optical pathway and chopper "54","62") having a second field of view (see Figure 3); and an optical image processor (see Figure 3, choppers "60","62", mirror "58", beam splitter "56", **F**ocal **P**lane **A**rray "50") for relaying the first and second fields of view in alternating time sequence to a camera interface (see [0004]).

As to claim **2**, Medan et al. teaches the system as set forth in claim 1, the first and second lenses cooperating with the image processor to image a combined field of view at the camera interface (see [0007]), the combined field of view being larger than either of the first or second fields of view *{The combined field of view of the two aforementioned lenses is inherently greater than the field of view of the individual lenses.}*

As to claim **3**, Medan et al. teaches the system as set forth in claim 2, the combined field of view covering at least about 2π steradians (see [0007]; *{360 degree azimuth = 2π steradians}*).

As to claim **4**, Medan et al. teaches the system as set forth in claim 1, the first lens comprising a first plurality of lens elements (see Figure 3, chopper "60", optical pathway "52").

As to claim **5**, Medan et al. teaches the system as set forth in claim 4, the second lens comprising a second plurality of lens elements (see Figure 3, chopper "62", optical pathway "54").

Note for claim 7. It is noted that the USPTO considers Applicant's "one of" language to be anticipated by any reference containing one of the corresponding subsequent elements.

As to claim **7**, Medan et al. teaches the system as set forth in claim 1, further comprising one of a digital focal plane and optical film (see Figure 3, **F**ocal **P**lane **A**rray "50"; [0016], Lines 4-7; *{CCD Arrays are used only in digital cameras and are known as digital focal plane arrays.}*) to record one or both of the first and second fields of view through the camera interface (see [0020]; *{It is inherent that there is a camera interface between the optical image processor and the focal plane array in Figure 3.}*).

As to claim **8**, Medan et al. teaches the system as set forth in claim 7, further comprising a digital camera (see imaging apparatus in Figure 1) with the digital focal plane (see [0016], Lines 4-7).

As to claim **9**, Medan et al. teaches the system as set forth in claim 8, the digital camera, coupling with the camera interface, to cooperatively record images of the first and second fields of view (see [0020]).

As to claim **14**, Medan et al. teaches the system as set forth in claim 1, the optical image processor comprising a switch (see Figure 3, choppers "60","62", mirror "58") configured to alternatively relay the first and second fields of view to the interface (see [0011]).

As to claim **15**, Medan et al. teaches the system as set forth in claim 14, wherein the switch comprises a time dependent switch (see [0011], "... moved at high frequency") constructed and arranged to alternatively relay the first and second fields of view at intervals (see [0010],[0011]) of at least about a refresh rate for a digital camera (see [0009]; *{Since the apparatus is digital, as inferred from the focal plane being a CCD, it is inherent that the video refresh rates, as mentioned by Medan et al., are those of digital cameras.}*).

As to claim **17**, Medan et al. teaches the system as set forth in claim 1, the optical image processor comprising a switch having a two-sided mirror (see Figure 3, mirror "58"; *(As can be seen in Figure 3, mirror "58"has two sides to it.}*) configured to alternatively relay images from respective first and second lenses to the camera interface (see [0010], [0011]).

As to claim **25**, Medan et al. teaches the system as set forth in claim 1, further comprising a motion picture camera (see imaging apparatus in Figure 1; *{The motion picture camera having video rates is inherently incorporated in video, ie. motion picture, cameras.}*) connected to the camera interface and timed in cooperation with the optical image processor (see [0009]) for capturing the respective fields of view from the lenses alternatively as alternative images (see [0004]) on adjacent frames *{The alternative images together, on adjacent frames, would encompass a 360 degree field of view, and appear as if they were on the same single frame (see [0019].}*).

As to claim **26**, the limitations in claim 26 can be found in claim 25. Therefore, claim 26 is analyzed and rejected as previously discussed with respect to claim 25.

As to claim **29**, the limitations of claim 29 can be found in claim 14. Therefore, claim 29 is analyzed and rejected as previously discussed with respect to claim 14.

As to claim **35**, Medan et al. teaches in an imaging device having a first lens and a second lens (see Figure 3, see choppers "60","62", optical pathways "52","54"), the improvement comprising: a camera for use in recording images (see imaging apparatus in Figure 1) from the first lens and the second lens (see [0004]); and an optical switching mechanism (see Figure 3, mirror "58", choppers "60","62") for use in providing the camera with time-sequenced alternating images from the first lens and the second lens (see [0004]).

As to claim **36**, Medan et al. teaches a method of capturing optical images in a system having a first lens and a second lens (see Figure 3, see choppers "60","62", optical pathways "52","54") in a selectively configurable optical pathway placing the first lens and the second lens in optical communication with a camera (see Figure 3; *{Camera starts at the focal plane array.}*), the method comprising the steps of: capturing an image from the first lens while the optical pathway is placed in a configuration that blocks transmissivity between the second lens and the camera while permitting transmissivity between the first lens and the camera (see [0010],[0011];[0004]); switching to reconfigure the optical pathway into a configuration that permits transmissivity between the second lens and the camera while blocking transmissivity between the first lens and the camera; and capturing an image from the second lens (see [0010],[0011]; [0004]).

As to claim **37**, Medan et al. teaches the method according to claim 36, wherein the respective steps of capturing an image from the first lens and capturing an image from the second lens include respectively capturing the images on different frames (see [0010]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 10,11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Medan et al. (see Patent Number above) in view of Oswal (US # 6,181,883).

As to claim **10**, Medan et al. teaches the system as set forth in claim 7. The claim differs from Medan et al. in that it further requires a photographic camera with optical film.

In the same field of endeavor, Oswal teaches a dual-purpose camera with conventional film and digital image capture modules (see Abstract). In light of the teaching of Oswal it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the camera of Medan et al. to include conventional, photographic image capture capabilities with optical film. Conventional film cameras hold certain qualities that digital cameras do not; namely, better optics, ability to change lenses and aperture settings, less costly (see Oswal, Col. 1, Lines 38-44). With a dual-purpose camera, the user would be able to reap benefits of both conventional film and digital cameras.

As to claim **11**, Medan et al., as modified by Oswal, teaches the system as set forth in claim 10, the photographic camera (see Oswal, Abstract), coupling with the interface, to cooperatively record images of the first and second fields of view (see Medan et al., [0020]).

5. Claims 12,13,16,19,24,27,28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Medan et al. (see Patent Number above) in view of Keast et al. (US # 5,721,585).

As to claim **12**, Medan et al. teaches the system as set forth in claim 1, comprising a first and second lens. The claim differs from Medan et al. in that it further requires the lenses comprise fisheye lens each having a substantially hemispheric field of view.

In the same field of endeavor, Keast et al. teaches fisheye lenses (see Figure 3A, lenses are not numbered; Col. 7, Lines 24-27) that comprise a substantially hemispheric field of view (see Col. 5, Lines 17-19). In light of the teaching of Keast et al., it would have been obvious to

one of ordinary skill in the art at the time the invention was made to modify the imaging apparatus of Medan et al. to include fisheye lenses as the lenses, which capture the alternate scenes. Fisheye lenses allow for a simple, yet effective, lens assembly with a reduced cost due to omission of electronics for rotary cameras (see Col. 4, Lines 8-12).

As to claim **13**, Medan et al., as modified by Keast et al., teaches the system as set forth in claim 12, wherein the hemispheric field of view comprises about 185 degrees (see Col. 5, Lines 17-19; *{180 Degrees is about 185 Degrees.}*).

As to claim **16**, Medan et al. teaches the system as set forth in claim 1, the optical image processor comprises a switch (see Figure 3, mirror "58", choppers "60","62") configured to alternatively relay images from the first and second lenses to the camera interface (see [0010], [0011]) at video refresh rates (see [0006]). The claim differs from Medan et al. in that it requires the images to be relayed to the camera interface at intervals equal to or less than 0.5 seconds.

In the same field of endeavor, Keast et al. teaches video frame rates at 30 Hz (1/30 seconds) (see Col. 4, Lines 47-50). In light of the teaching of Keast et al., it would a have been obvious to one of ordinary skill in the art at the time the invention was made to use the video frame rates of 30 Hz of Keast et al. in the imaging apparatus of Medan et al. Such a rate would allow for a quality motion picture, wherein human beings would not be able to notice the flicker.

As to claim **19**, Medan et al., as modified by Keast et al., teaches the system as set forth in claim 1, the optical image processor (see Medan et al., Figure 3, choppers "60","62", mirror "58", beam splitter "56", **F**ocal **P**lane **A**rray "50") having a switch response time (see Medan et al., [0009]) not greater than 0.5 seconds (see Keast et al., Col. 4, Lines 47-50).

As to claim **24**, Medan et al. teaches a system as set forth by claim 1, wherein a camera is connected to the camera interface and cooperating with the optical image processor for capturing the respective fields of view from the lenses (see [0009]-[0011]) as a combined image encompassing a combined field of view covering 2π steradians (see [0007]). The claim differs from Medan et al. in that it requires the camera to be a still camera.

In the same field of endeavor, Keast et al. teaches a camera with still and motion taking capabilities (see Abstract, Lines 1-3). In light of the teaching of Keast et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to include motion and still image taking capabilities in the imaging apparatus of Medan et al. Such versatility would allow for the imaging apparatus of Medan et al. to be more desirable.

As to claim **27**, Medan et al. teaches the system as set forth in claim 26, further comprising a motion picture camera connected to the camera interface (see Medan et al., imaging apparatus in Figure 1; *{The fact that this apparatus is a motion picture camera can be inferred by the fact that video rates are inherently incorporated in video, ie. motion picture, cameras.}*), the first and second lenses comprising a pair of fisheye lenses (see Keast et al., Figure 3A, lenses are not numbered; Col. 7, Lines 24-27) each having a hemispheric field of view (see Keast et al., Col. 5, Lines 17-19; *{180 Degrees is a hemispheric field of view.}*).

As to claim **28,** Medan et al. teaches the system as set forth in claim 27, wherein the hemispheric fields of view comprise about 185 degrees (see Keast et al., Col. 5, Lines 17-19; *{180 Degrees is about 185 Degrees.}*).

6. Claims 18,30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Medan et al. (see Patent Number above) in view of Veksland et al. (US # 6,801,260).

As to claim **18**, Medan et al. teaches the system as set forth in claim 17. The claim differs from Medan et al. in that it further requires the mirror to be spring-loaded.

In the same field of endeavor, Veksland et al. teaches a pivot for a mirror be provided by a leaf-spring (see Col. 3, Lines 2-7). In light of the teaching of Veksland, it would have been obvious to one of ordinary skill in the art at the time the invention was made to spring load the mirror of Medan et al. A spring-loaded pivot would maintain greater stability of the mirror (see Col. 3 Lines 5-7).

As to claim **30**, Medan et al., as modified by Veksland et al., teaches the system as set forth in claim 26, wherein the optical image processor (see Medan et al., Figure 3, choppers "60","62", mirror "58", beam splitter "56", **F**ocal **P**lane **A**rray "50") comprises a switch (see Medan et al., Figure 3, mirror "58", choppers "60","62") having a spring loaded (see Veksland et al., Col. 3, Lines 2-7) two-sided mirror (see Medan et al., Figure 3, mirror "58"; *(As can be seen in Figure 3, mirror "58"has two sides to it.}*) configured to alternatively relay images from the respective lenses of the lens array to the camera interface (see Medan et al., [0010], [0011]).

7. Claims 20,22,23,**6**,31,33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Medan et al. (see Patent Number above) in view of Dean et al. (US # 5,402,191).

Note explanation of rejection of claim 6 after the rejections of claims 20, 22, and 23.

As to claim **20**, Medan et al. teaches the system as set forth in claim 1 and an optical image processor (see Figure 3, choppers "60","62", mirror "58", beam splitter "56", **F**ocal **P**lane

Array "50") comprising a switch (see Figure 3, mirror "58", choppers "60","62"). The claim differs from Medan et al. in that it further requires the switch has an electro-optical liquid crystal.

In the same field of endeavor, Dean et al. teaches a scattering shutter (see Figure 4) comprising a layer with a polymer dispersed liquid crystal device (see Col. 5, Lines 48-50). In light of the teaching of Dean et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the choppers of Medan et al. to include an electro-optical polymer dispersed liquid crystal. Polymer Dispersed Liquid Crystal Devices are relatively inexpensive as compared with other scattering devices, do not requires as stringent manufacturing requirements, and can be formed on a flexible substrate (see Col. 6, Lines 60-66).

As to claim **22**, Medan et al., as modified by Dean et al., teaches the system as set forth in claim 20, wherein the optical image processor comprises a switch having at least one analyzer (see Figure 3, choppers "60","62").

As to claim **23**, Medan et al. teaches the system as set forth in claim 1 and an optical image processor (see Figure 3, choppers "60","62", mirror "58", beam splitter "56", **F**ocal **P**lane Array "50") comprising a switch (see Figure 3, mirror "58", choppers "60","62"). The claim differs from Medan et al. in that it further requires the switch have at a continuously variable linear polarizer.

In the same field of endeavor, Dean et al. teaches a scattering shutter (see Figure 4) comprising a linear polarizer film (see Col. 5, Lines 50,51). In light of the teaching of Dean et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the choppers of Medan et al. to include a linear polarizer film. Such films

change randomly polarized light into plane polarized; thus, making it easier for the liquid crystal portion to scatter the light.

As to claim **6**, Medan et al., as modified by Dean et al., teaches the system as set forth in claim 5, the first plurality of lens elements and the second plurality of lens elements sharing at least one lens elements in common *{The electro-optical liquid crystal is common in both the choppers "60","62"in Figure 3, as set forth in claim 20.}*

As to claim **31**, the limitations of claim 31 can be found in claim 20. Therefore, claim 31 is analyzed and rejected as previously discussed with respect to claim 20.

As to claim **33**, the limitations of claim 33 can be found in claim 23. Therefore, claim 33 is analyzed and rejected as previously discussed with respect to claim 23.

8. Claims 21,32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Medan et al. (see Patent Number above) in view of Weber et al. (US # 5,686,979).

As to claim **21,** Medan et al. teaches the system as set forth in claim 1 and an optical image processor (see Figure 3, choppers "60","62", mirror "58", beam splitter "56", **F**ocal **P**lane **A**rray "50") comprising a switch (see Figure 3, mirror "58", choppers "60","62"). The claim differs from Medan et al. in that it further requires the switch have a variable retarder.

In the same field of endeavor, Weber et al., teaches a switchable optical panel (see Figure 1) comprising an optical retarder film (see Col. 5, Lines 48-50). In light of the teaching of Weber et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chopper of Medan et al. to include an optical retarder film. Such a film

would allow the device to maintain desirable optical characteristics at the visible wavelength range and at off-normal angles (see Col. 5, Lines 53-55).

As to claim **32,** Medan et al. teaches the system as set forth in claim 1 and an optical image processor (see Figure 3, choppers "60","62", mirror "58", beam splitter "56", **F**ocal **P**lane **A**rray "50") comprising a switch (see Figure 3, mirror "58", choppers "60","62"), and an analyzer (see Figure 3, choppers "60","62"). The claim differs from Medan et al. in that it further requires the switch have a variable retarder.

In the same field of endeavor, Weber et al., teaches a switchable optical panel (see Figure 1) comprising an optical retarder film (see Col. 5, Lines 48-50). In light of the teaching of Weber et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chopper of Medan et al. to include an optical retarder film. Such a film would allow the device to maintain desirable optical characteristics at the visible wavelength range and at off-normal angles (see Col. 5, Lines 53-55).

9. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Medan et al. (see Patent Number above) in view of Keast et al. (see Patent Number above) in view of Gilblom et al. (US # 5,650,813).

As to claim **34**, Medan et al. teaches a system as set forth in claim 26, comprising the optical image processor. The claim differs from Medan et al. in that it further requires a rotating partial reflector disc synchronized to a frame rate of the motion picture camera.

In the same field of endeavor, Keast et al. teaches a partial reflector rotating disc (see the rotating scanning head in Figure 1), and Gilblom et al. teaches a frame rate of a camera in

accordance with the rotation of the camera (see Col. 1, Lines 52-54). In light of the teaching of Keast et al. and Gilblom et al., it would have been obvious to modify the optical image processor of Medan et al. to include the partial reflector rotating disc and have the rotation be synchronized to the frame rate. A partial reflector rotation disc having a rotation speed synchronized with a frame rate of the camera allows for images to be taken faithfully without blur.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Daniels whose telephone number is (703) 305-4807. The examiner can normally be reached on 8:00 A.M. - 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andy Christensen can be reached on (703) 308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

12/10/2004

NGOC-YEN VU
PRIMARY EXAMINER